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A new species of *Lycodon* (Serpentes: Colubridae) from the Deccan Plateau of India, with notes on the range of *Lycodon travancoricus* (Beddome, 1870) and a revised key to peninsular Indian forms

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Abstract.—A new species of wolf snake, *Lycodon deccanensis* sp. nov., is described from southern India, from the hill ranges situated in the Deccan Plateau adjacent to the Southern Eastern Ghats and the Mysore uplands. The new species somewhat resembles, and has previously been confused with, another predominantly wet-zone taxon *Lycodon travancoricus*. The new species can be diagnosed by the following combination of characters: dorsal scale rows 16–17:17:15; usually 9 supralabials; ventrals 181–201; subcaudals 68–74, divided; an undivided anal scale; loreal in contact with internasal; nasal not in contact with prefrontal, separated by loreal-internasal contact; supraocular usually contacting prefrontal; preocular usually not contacting frontal; and a dorsum that is brownish in adults and blackish in juveniles, with white cross bars. Some previous records of *Lycodon travancoricus* (sic) from outside the Western Ghats represented the new species, while others were re-identified as *L. aulicus* and *L. anamallensis*, effectively restricting the range of *L. travancoricus* to the Western Ghats and Southern Eastern Ghats.

Keywords. Coloration, Deccan plateau, *Lycodon deccanensis* sp. nov., Reptilia, scalation, South Arcot, Tumkur

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Introduction

The Colubrid snake genus, *Lycodon* H. Boie in Schlegel, 1826, is a diverse group of non-venomous, nocturnal snakes inhabiting tropical Asia (Wallach et al. 2014; Uetz et al. 2020). In several parts of its vast range, which stretches from Transcaucasia in the northwest to Sulawesi in the southeast (Wallach et al. 2014), many new species of *Lycodon* have been described in recent years (Grismer et al. 2014; Wostl et al. 2017; Jassen et al. 2019; Vogel and David 2019; Luu et al. 2019, 2020). The generic taxonomy of this group of snakes has been in a state of flux, as some authors (Guo et al. 2013; Siler et al. 2013) have included taxa traditionally (Smith 1943) classified under the genera *Dryocalamus* Günther, 1858

and *Dinodon* Duméril and Bibron, 1853. In the Indian peninsula (the elevated, triangular peninsular shield south of Vindhya, see Radhakrishna 1993), six species are currently known (Whitaker and Captain 2008; Aengals et al. 2018), namely: *Lycodon aulicus* (Linnaeus, 1758), *L. striatus* (Shaw, 1802), *L. anamallensis* Günther, 1864, *L. travancoricus* (Beddome, 1870), *L. flavomaculatus* Wall, 1908, and *L. flavicollis* Mukherjee and Bhupathy, 2007 (Smith 1943; Daniel 2002; Das 2002; Whitaker and Captain 2008; Ganesh and Vogel 2018).

The taxonomy and distribution of *Lycodon* species in South Asia still remain incompletely known. Based on a phylogenetic study, Pyron et al. (2013) clarified the affinities and generic allocation of the Sri Lankan species *L. carinatus* (Kuhl, 1820), which was previously

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regarded as the sole member of the genus *Cercaspis*. Ganesh and Vogel (2018) reassessed the taxonomy of one of the most ‘well-known’ and ‘common’ species, *L. aulicus*, and recognized *L. anamallensis* Günther, 1864 as valid, with the purportedly Sri Lankan endemic taxon *L. osmanhilli* Taylor, 1950 being its synonym. The distribution of *L. mackinnoi* Wall, 1906 in Pakistan was reported by Jablonski et al. (2019). Relating to this work, *L. travancoricus*, a species endemic to the hills of peninsular India, was recently redescribed and some incorrect identifications that have caused dubious extralimital localities in places such as Sindh, Pakistan, were also revealed (Ganesh et al. 2020a).

Within the Indian peninsula, certain geographical outlier records were known, such as those from near South Arcot district (Tamil Nadu) and Vizagpatnam (Andhra Pradesh) in the Eastern Ghats and from Jabulpore, near the Seoni Hills of Central India (Smith 1943). These were in fact historical reports of specimens identified as *L. travancoricus* in the collections of Zoological Survey of India - ZSI (Sclater 1891) and Bombay Natural History Society Museum - BNHS (Wall 1923). Recently, there has also been a report of an unidentified species of wolf snake, represented as *Lycodon* sp., from the Southern Eastern Ghats (Ganesh et al. 2018). While dealing with the catalogue of herpetological specimens in Sálím Ali Centre for Ornithology and Natural History (SACON) [Ganesh et al. 2020b], a damaged specimen (SACON/VR-93) of this species was listed as *Lycodon* sp. Our examination of the specimens identified as *L. travancoricus* from extralimital localities (i.e., outside the Western Ghats) indicated that these were not conspecific with *L. travancoricus*. While the specimens reported from the Northern Eastern Ghats and Central India represent *L. aulicus* and *L. anamallensis* (see below), the South Arcot specimen represents the undescribed species reported by Ganesh et al. (2018, 2020b) as *Lycodon* sp. A fresh collection of a dead-on-road specimen from the Bangalore uplands further indicates the conspecificity of these specimens. This innominate form is herein described as a new species.

Materials and Methods

A total of nine specimens representing this species, both preserved and live, were examined for this study, in addition to 95 specimens representing six regional congeners (Appendix 1). Seven uncollected specimens of the new species (four live and three dead), consisting of three juveniles and four adults, were also considered and included as referred non-type specimens. For this study we follow the definitions of the genus *Lycodon* as per Smith (1943) and Wickramasinghe et al. (2020), and we retained standard morphological characters used for *Lycodon* (also see Ganesh and Vogel 2018; Ganesh et al. 2020a). The pale bands on the body and tail were counted on one side, usually the right side when not damaged.

Minimally visible or incomplete bands were counted as one band; bands that were fused (often forming an “X”) were counted as two. Ventral plate counting followed Dowling (1951), and the subcaudals count exempted the terminal scale. Measurements, except body and tail lengths, were taken with a slide-caliper to the nearest 0.1 mm; all body measurements were made to the nearest millimeter. The dorsal scale rows were counted at one head length behind the head, at midbody (i.e., at the level of the ventral plate corresponding to one-half of the total number of ventrals), and at one head length before the vent. Half-ventrals were counted as one. The first scale under the tail meeting its opposite was regarded as the first subcaudal. The collar on the neck was not counted, and bands covering the anal shield were added to the bands of the body. Sex of preserved specimens was determined by dissection of the ventral tail base, while that of live individuals was examined to the extent possible by gentle anal palpation (also see Ganesh and Vogel 2018). Geographic coordinates were recorded *in situ* using a handheld GPS on a WGS-84 map datum, or were sourced from GoogleEarth software, and are represented in decimal degrees rounded to three decimal places.

Abbreviations. Avg.: average; SVL: snout to vent length; Collections. – BMNH: The Natural History Museum, London, United Kingdom. – BNHS: Bombay Natural History Society Museum, Mumbai, India. – CAS: California Academy of Sciences Museum, San Francisco, California, USA. – CESS: Centre for Ecological Sciences (Snakes), Bangalore, India. – CSPT/S: Chennai Snake Park Museum, Chennai, India. – FMNH: Field Museum of Natural History, Chicago, Illinois, USA. – NMW: Naturhistorisches Museum Wien, Vienna, Austria. – MCZ: Museum of Comparative Zoology, Harvard, Massachusetts, USA. – MHNG: Muséum d’Histoire Naturelle, Geneva, Switzerland. – SACON: Sálím Ali Centre for Ornithology and Natural History, Coimbatore, India. – SMF: Naturmuseum Senckenberg, Frankfurt am Main, Germany. – UPZM: University of Peradeniya Zoology Museum, Peradeniya, Sri Lanka. – ZFMK: Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany. – ZMB: Zoologisches Museum Berlin, Germany. – ZSI: Zoological Survey of India, Kolkata, India.

Taxonomy

Lycodon deccanensis sp. nov.

Lycodon travancoricus (*nec* Beddome, 1870) – Sclater 1891 part.

Lycodon sp. – Ganesh et al. (2018, 2020b).

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Holotype: BNHS 3596, coll. K.G. Punith and Ashok Kumar Mallik in June 2012.

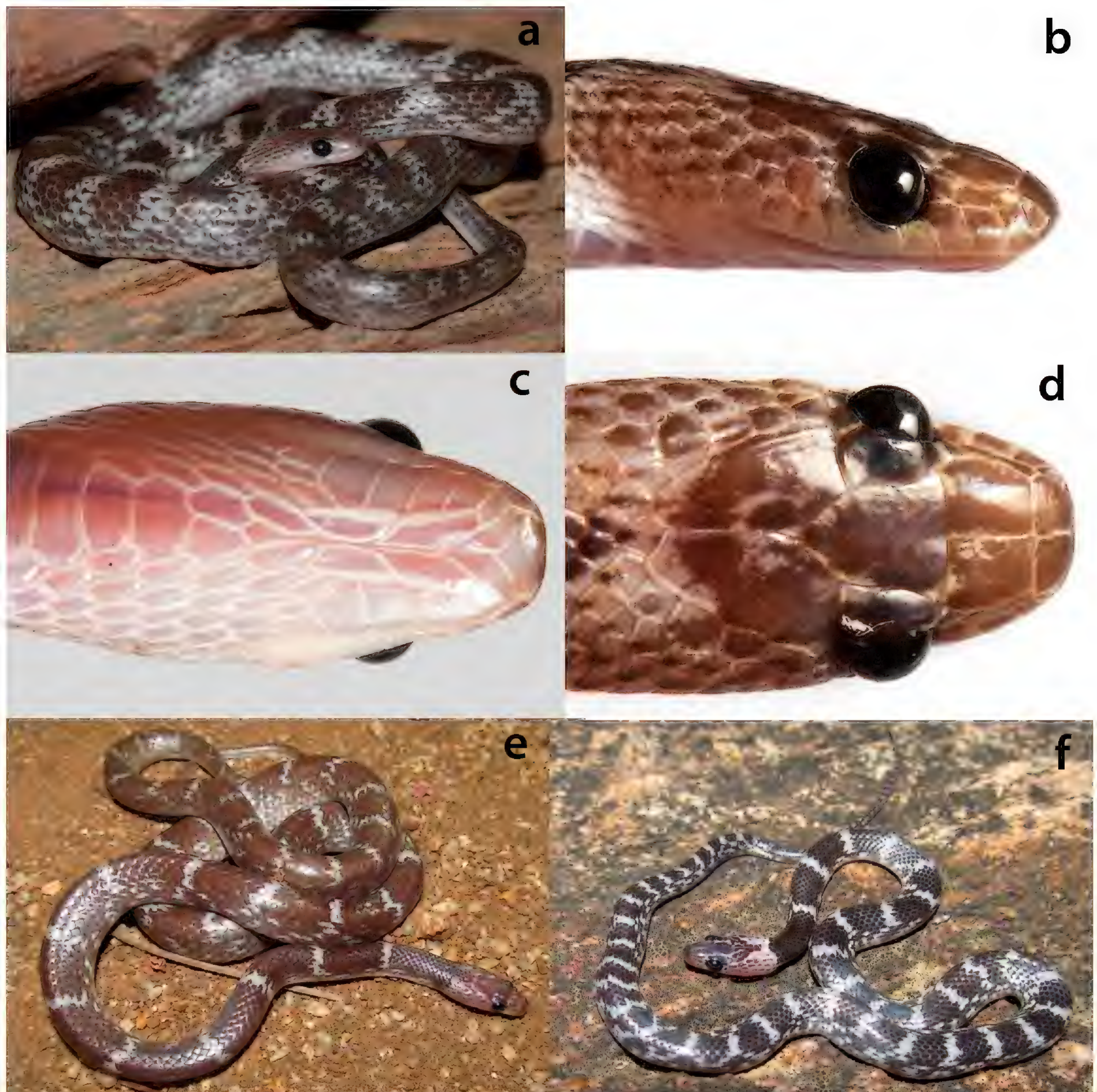


Fig. 1. *Lycodon deccanensis* sp. nov. in life: (a) entire, dorsolateral view; (b–d) head profiles of a live uncollected specimen from Devarayana Durga; (e–f) live uncollected adult and juvenile from Melagiri, showing ontogenetic color shift. Photos by K.G. Punith, M.V. Shreeram, and S.R. Ganesh.

Type locality: Devarayana Durga (13.371°N, 77.210°E; 1,060 m asl) in Tumkur district, Karnataka, India.

Paratype: ZSI 13271 from South Arcot district, Tamil Nadu, India; Mus. Coll. Jaffa (also see Sclater 1891).

Referred specimens (n = 7): SACON/VR-93, a damaged specimen from Anaikatti, Coimbatore district, Tamil Nadu; two uncollected roadkill specimens sighted in 2011 in Bodha Malai, Salem-Namakkal districts, Tamil Nadu; two live individuals sighted in 2016 in Guthirayan hills, Krishnagiri district, Tamil Nadu, one live specimen sighted in Snamavu R.F. Hosur, Tamil Nadu, and one roadkill sighted in 2017 in Tirupati and Horsley Hills, Chittoor district, Andhra Pradesh.

Etymology: Toponym, named after its region of occurrence – the Deccan plateau, a raised table land of late Cretaceous origin, situated between the Eastern Ghats and the Western Ghats of the Indian peninsula.

Diagnosis: A species of *Lycodon* inhabiting the Deccan plateau of India, characterized by: small size (total length < 470 mm); scales smooth, in 16–17:17:15 rows, without apical pits; usually 9 supralabials (10, in one case); ventrals 181–201 (n = 9) angulate laterally; anal plate undivided; subcaudals 68–78 (84; n = 8), paired; loreal in contact with internasal, separate from eye; nasal not in contact with prefrontal; anterior pair of genials subequal to posterior pair; supraocular usually contacting prefrontal; preocular usually not contacting



Fig. 2. *Lycodon deccanensis* sp. nov. in preservative: (a–b) entire and head closeup (inset) of Paratype ZSI 13271; (c) entire view of SACON/VR-93. Photos by K. Deuti and S.R.Ganesh.

frontal (preocular separating frontal, prefrontal, and supraocular in one case); dorsum brown in adults and black in juveniles, with white cross bars.

Due to the slender body and smaller head, the new species superficially resembles the genus *Dryocalamus*, its higher midbody scale rows (17) and lower ventral counts (181–201; avg. 190; $n = 9$) [vs. rows 13–15; ventrals 200+ in *Dryocalamus*, see Smith 1943] clearly indicate this species belongs to the genus *Lycodon*, even if *Dryocalamus* is regarded as a valid genus.

Description of the Holotype

Measurements (all in mm): Snout-vent length 212; tail length: 31+? (tail cut); head length: 8.2; head width: 5.8;

eye-snout distance: 2.6; eye diameter: 1.9; internarial distance: 2.4; interocular distance: 3.5; mandible-eye distance: 6.2.

Habitus: Body rather slender and elongate; head slightly distinct from neck; tail fairly long and tapered; head flat and depressed, not quite spatulate; posterior temporal regions not distinctly bulbous and enlarged; ventrolateral region with a grooved margin; canthus rostralis not well-defined; snout oblong to rounded in lateral view.

Scalation: Scales smooth, without apical pits; dorsal scale rows: 16, 17, 15 rostral visible from above, contacting nasals; supralabials: 9 (3–5 touching eye); infralabials: 9 (1–5 touching anterior genial); ventrals 198 (angulate laterally); anal plate entire; paired subcaudals 28+? (tail cut).

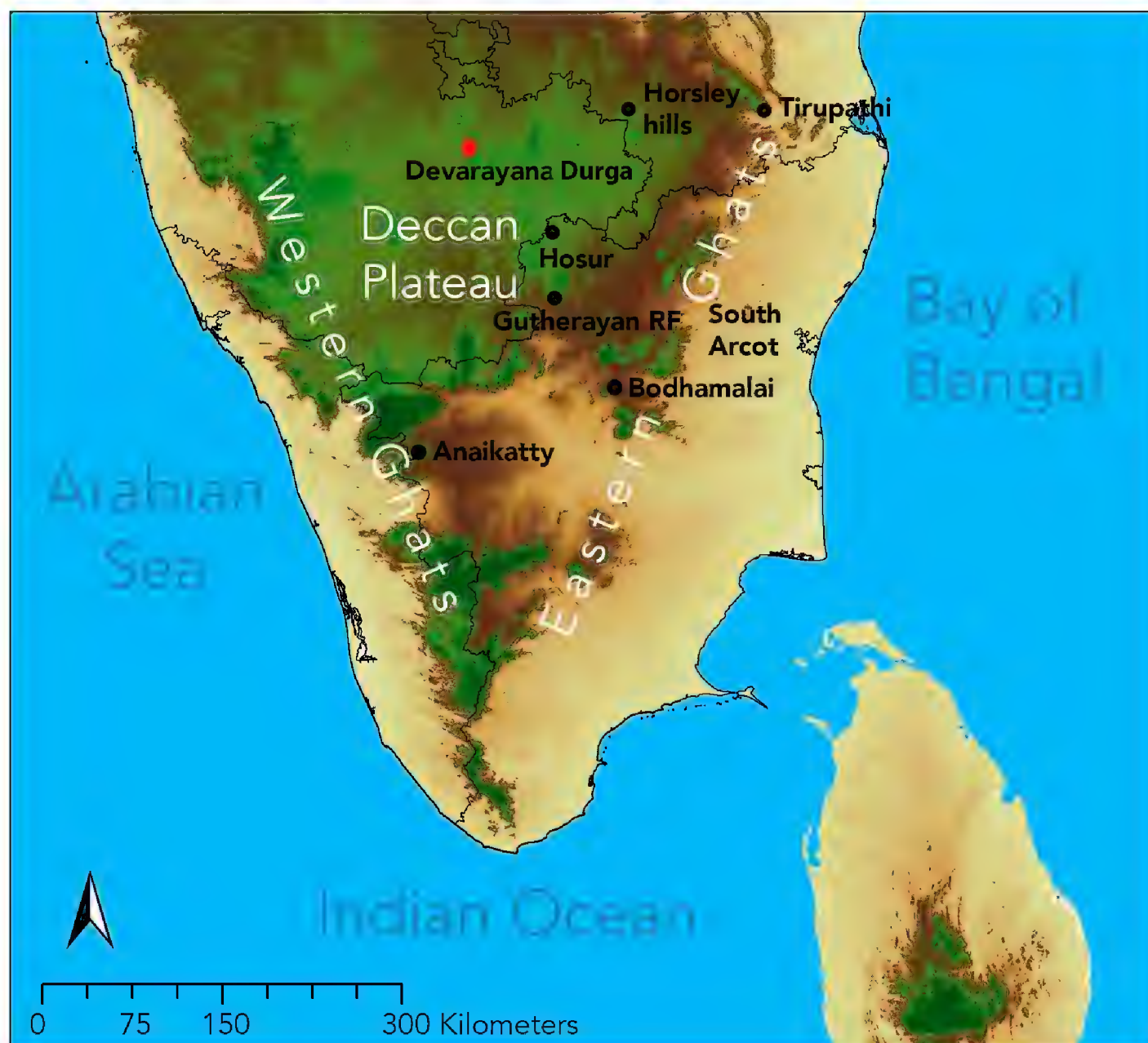


Fig. 3. Map showing the type locality and distribution records of *Lycodon deccanensis* sp. nov. Type locality (Devarayana Durga) marked with a red dot.

Coloration in life: Dorsum deep brown with 48 white cross bars on body; cross bars present vertebally, not extending to full circumference of body along the flanks, wider anteriorly and narrower posteriorly, much thinner and well-spaced anteriorly, thicker and close-set posteriorly; lateral sides of body with white squared spots either between two or subsequent to vertebral cross bars, giving it an overall white-mottled appearance; a distinctive white wash covering the whole posterior part of head from postocular, temporal regions encapsulating until parietal and occipital regions; almost all scales on head presenting a distinctive white outline, except the frontal and prefrontal parts that may have white flecks inside.

Coloration in preservation: After preservation in alcohol for eight years, dark brownish ground color much faded in intensity to light creamy brown; contrasting white barred pattern less evident; eyes cloudy white.

Variation: In agreement with the holotype in most respects, and showing the following intraspecific variation (paratype): ventrals 181, subcaudals 72 pairs; 52 white cross bars on body; preocular separating frontal, prefrontal, and supraocular; measurements in mm: snout-vent length: 168; tail length: 42.50; head length: 7.18; head width: 5.19; eye-snout distance: 2.79; eye diameter: 1.55; internarial distance: 2.04; interocular distance:

3.10; inferior eye margin to upper lip margin distance: 0.74; the damaged specimen SACON/VR-93 has parts of head missing, 188 ventrals, 64 paired subcaudals, 49 white cross bars on body and measurements (mm): snout-vent length: 280; tail length: 60; body width: 6.35.

The live individuals were very similar to the holotype in morphology, and show the following variation: infralabials 10 or 11 on either side; body scales in 17:17:15 rows, all smooth and glossy; ventrals 181–201, notched laterally; anal plate undivided; subcaudals 68–78 (84 outlier value) pairs. Adults (total length 360–450 mm) much more brownish; whereas juveniles (< 200 mm) dark coffee-brown to pitch black ground color, on which the white cross bars appear as usual.

Distribution and natural history. Based on the specimens observed *in situ* during fieldwork, this species appears to inhabit mid- to higher elevations (> 600 m asl), and hilly forest tracts in the Deccan plateau, such as the taller isolated peaks in the Eastern Ghats and the Mysore uplands. The two examined specimens in museum collections (ZSI and SACON), come from near South Arcot (ca. 11.77°N, 78.75°E; 850 m asl) and Anaikatti (11.092°N, 76.778°E; 670 m asl), respectively. Though the exact place names given on the jar labels of these specimens furnish coarse-level geographic data, the places are always associated with the presence of hills nearby (see Ganesh et al. 2018), attesting to its affinity for the hills.



Fig. 4. Extralimital records re-identified as (a–b) *Lycodon anamallensis* (BNHS 1602a and b) and (c–e) *Lycodon* cf. *aulicus* (BNHS 1603 and 1604). Photos by A. Omkar.

Like most members of the genus, this species is usually nocturnal, as the four active individuals were sighted at night during fieldwork. At least the juveniles are semi-arboreal, and have been seen twice climbing trees and building walls, similar to the habits of some *Lycodon* species and especially *Dryocalamus* species (Smith 1943). Potential prey species (pers. obs. in other *Lycodon* species) recorded in the vicinity of these snakes are: *Cnemaspis graniticola* in Horsley Hills that were sleeping on the same building wall; and *Hemiphyllodactylus jnana* in Melagiri Hills, that were seen on plants near roadsides (also see Agarwal et al. 2019, 2020).

Regarding the observations on uncollected specimens seen *in situ* in August 2011, two juvenile roadkills were seen in Bodha Malai (11.543°N, 78.184°E; 920 m asl), in the Eastern Ghats (Namakkal district, Tamil Nadu). The surrounding area was dry evergreen forest, with a pliable tar road on which the dead snakes were noticed. Sympatric snakes noted were *Rhinophis goweri*, *Uropeltis rajendrani*, and *Naja naja*. In June 2016, at 2050 h, a juvenile was sighted at 1.3 m crawling over tree bark atop a dry evergreen forest patch in Guthirayan Hills (12.290°N, 77.837°E; 1,400 m asl) of Melagiris, in the

Eastern Ghats (Krishnagiri district, Tamil Nadu). After two days, at 2210 h, an adult was seen on bare ground bordering a road in the same forest area. This area was covered with semi-evergreen forests. Sympatric snakes sighted were *Uropeltis* cf. *elliotti*, *Trimeresurus gramineus*, *Dendrelaphis tristis*, *Boiga trigonata*, *B. flaviviridis*, and *B. nuchalis* (also see Ganesh et al. 2018). In July 2016, an adult individual was found on the road near Sanamavu RF (12.665°N, 77.874°E; 800 m asl), Hosur, with a surrounding habitat similar to the type locality, dominated by dry forests and eucalyptus plantations. In June 2017, a juvenile was sighted at 1945 h, crawling at a height of 1.5 m on the walls of an old, abandoned building in Horsley Hills (13.650°N, 78.393°E; 1,200 m asl), a part of the Mysore plateau (Chittoor district, Andhra Pradesh). The vegetation in the vicinity was rather anthropogenically-modified, with dry evergreen forests intermixed with eucalyptus plantations. Sympatric snakes sighted were *Lycodon flavicollis*, *Oligodon taeniolatus*, *Coelognathus* cf. *helena* complex, and *Bungarus caeruleus* (the latter as roadkill). In September 2017, an adult roadkill *Lycodon deccanensis* **sp. nov.** was found in the Tirupati hills (13.683°N, 79.357°E; 900 m asl). The surrounding habitat

New *Lycodon* species from southern India

Table 1. Identities and morphological features of specimens erroneously reported in the literature as *Lycodon travancoricus* (sic) from outside the Western Ghats (Cocanada or Kakinada, Vizagapatnam and Jabulpore) apart from the paratype of *Lycodon deccanensis* **sp. nov.**

Species (here re-identified)	<i>Lycodon anamallensis</i>	<i>Lycodon anamallensis</i>	<i>Lycodon</i> cf. <i>aulicus</i>	<i>Lycodon</i> cf. <i>aulicus</i>
Museum Registration Number	BNHS 1062A	BNHS 1062B	BNHS 1063	BNHS 1064
Locality	Cocanada (=Kakinada)	Cocanada (=Kakinada)	Vizagapatnam, Madras Presidency	Jabulpore, Central India
Scale rows	15:17:15	16:17:15	16:17:16	16:17:16
Supralabials	9/9	9/9	9/10	9/9
Infralabials	10/10	10/11	11/11	11/11
Temporals	10	11	10	10
Anal scale	Divided	Divided	Divided	Divided
Ventrals	195+3	197+3	195+3	194
Subcaudals	67 pairs	59 pairs	66 pairs	58 pairs
Loreal-internasal	Contacting	Contacting	Not contacting	Not contacting
Nasal-Prefrontal	Not contacting	Not contacting	Contacting	Contacting
Supraocular-prefrontal	Barely touching	Barely touching	Not contacting	Not contacting
Preocular-Frontal	Barely touching	Barely touching	Contacting	Contacting
Snout-vent length	402 mm	357 mm	449 mm	310 mm
Tail length	102 mm	74 mm	96 mm	62 mm

was dominated by dry and mixed deciduous forests, with active road traffic.

Comparisons: Here, *Lycodon deccanensis* **sp. nov.** is compared with all the known South Asian congeners (with only the opposing suite of character states listed). *Lycodon aulicus* (Linnaeus, 1758): anal plate undivided; supraocular not contacting prefrontal; preocular usually not contacting frontal. *Lycodon striatus* (Shaw, 1802): anal plate undivided; head not short and rounded; neck not indistinct; supralabials usually 9; higher ventral count (154–166 vs. 181–201 in new species); absence of yellow vertebral spots. *Lycodon anamallensis* Günther, 1864: anal plate undivided; white outlines in scales on top of posterior head, across parietals; dorsal cross bars white, never quite yellow; supralabials not distinctly creamy spotted with brown. *Lycodon travancoricus* (Beddome, 1870): subcaudals often undivided; loreal in contact with internasal; nasal not in contact with prefrontal; anterior genials subequal to posterior pair; supraocular usually contacting prefrontal; preocular usually not contacting frontal; *Lycodon flavomaculatus* Wall, 1908: anal plate undivided; higher ventral count (165–183 vs. 181–201 in new species); presence of distinct yellow vertebral spots. *Lycodon flavicollis* Mukherjee and Bhupathy, 2007: anal plate undivided; no distinct yellow collar mark; presence of white cross bars on dorsum, even in adults.

Identities of *Lycodon travancoricus* (sic) Records from Outside the Western Ghats

At least one report of *L. travancoricus* (sic), from ‘South Arcot’ (Sclater 1891) is relevant in the description of this

new species, *Lycodon deccanensis* **sp. nov.** Therefore, we also re-examined the specimens that are the basis of other such reports in the literature (Vizagapatnam and Jabulpore: Wall 1923; Cocanada: Underwood 1947). Based on our re-examination (Fig. 4; Table 1), these records now represent *Lycodon* cf. *aulicus* (Vizagapatnam, Jabulpore) and *L. anamallensis* (Cocanada). Our finding in turn restricts the distribution range of *L. travancoricus* to the Western Ghats (Ashambu to Surat Dangs) and the Southern Eastern Ghats (Sirumalai, Shevaroy, Kolli, and Bilgiri Hills).

Discussion

The finding of a new species of *Lycodon* from the semi-evergreen belts of the hill ranges constituting the Eastern Ghats and the Mysore uplands is not that surprising. In a regional sense, it is in keeping with other recent findings of new snakes from this region, e.g., *Lycodon flavicollis* by Mukherjee and Bhupathy (2007); *Boiga flaviviridis* by Vogel and Ganesh (2013); *Rhinophis goweri* by Aengals and Ganesh (2013); and *Uropeltis rajendrani* by Ganesh and Achyuthan (2020). As had already been highlighted (Agarwal et al. 2019, 2020; Ganesh et al. 2018), these hill ranges and elevated plateaus have not yet been systematically surveyed by herpetologists, especially for snakes.

This work is essentially an extension of Ganesh et al. (2020a), in that it further clarifies the supposedly extralimital records of “*L. travancoricus*” (sic), such as those for South Arcot (Sclater 1891), Cocanada (Underwood 1947), and Vizagapatnam and Jabulpore (Wall 1923). Apart from this new species representing the

record of South Arcot, two more species *L. anamallensis* and *Lycodon* cf. *aulicus* were involved in the records of Cocanada as well as Vizagaptnam and Jabulpore, respectively (see Table 2). The fact that *L. anamallensis* represented incorrect records of *L. travancoricus* (sic), again supports a similar finding (Ganesh et al. 2020a) in the Museum of Comparative Zoology, USA. Thus, based on the outcomes of these studies, the distribution range of *Lycodon travancoricus* is here restricted to the Western Ghats and the Southern Eastern Ghats.

This new species *Lycodon deccanensis* **sp. nov.** has been known to the herpetological community for at least the past 125 years, since the time of Sclater (1891). That it was lurking under the wrong name (*L. travancoricus*) once again underscores the necessity of ensuring accurate taxonomy, as well as in reporting geographical (or morphological) outliers. Further research is recommended to document the total distribution range, as well as the natural history and basic biology, of this new species.

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Literature Cited

- Aengals R, Ganesh SR. 2013. *Rhinophis goweri*, a new species of Shieldtail Snake from the southern Eastern Ghats, India. *Russian Journal of Herpetology* 20(1): 61–65.
- Aengals R, Kumar VMS, Palot MJ, Ganesh SR. 2018. *A Checklist of Reptiles of India. Version 3.0*. Zoological Survey of India, Kolkata, India. 35 p.
- Agarwal I, Khandekar A, Giri VB, Ramakrishnan U, Karanth KP. 2019. The hills are alive with geckos! A radiation of a dozen species on sky islands across peninsular India (Squamata: Gekkonidae, *Hemiphyllodactylus*) with the description of three new species. *Organisms, Diversity, and Evolution* 19(2): 341–361.
- Agarwal I, Thackeray T, Pal S, Khandekar A. 2020. Granite boulders act as deep-time climate refugia: a Miocene divergent clade of rupicolous *Cnemaspis* Strauch, 1887 (Squamata: Gekkonidae) from the Mysore Plateau, India, with descriptions of three new species. *Journal of Zoological Systematics and Evolutionary Research*. [In press]. <https://doi.org/10.1111/jzs.12391>
- Daniel JC. 2002. *The Book of Indian Reptiles and Amphibians*. Oxford Books, Oxford, United Kingdom and Bombay Natural History Society, Mumbai, India. 238 p.
- Das I. 2002. *A Photographic Guide to Snakes and other Reptiles of India*. New Holland, London, United Kingdom. 144 p.
- Dowling HG. 1951. A proposed standard system of counting ventrals in snakes. *British Journal of Herpetology* 1: 97–99.
- Ganesh SR, Vogel G. 2018. Taxonomic reassessment of the Common Indian Wolf Snakes *Lycodon aulicus* (Linnaeus, 1758) complex (Squamata: Serpentes: Colubridae). *Bonn Zoological Bulletin* 67(1): 25–36.

Revised key to South Asian *Lycodon* species (modified from Ganesh and Vogel 2018)

- 1a. Body scales strongly keeled.....*L. carinatus*
 1b. Body scales not strongly keeled.....2
 2a. Anal plate entire.....3
 2b. Anal plate divided.....4
 3a. Loreal not contacting internasal; nasal contacting prefrontal.....*L. travancoricus*
 3b. Loreal contacting internasal; nasal not contacting prefrontal.....*L. deccanensis* **sp. nov.**
 4a. Ventrals < 200, body more black than brown.....5
 4b. Ventrals > 200, body more brown than black.....6
 5a. Usually 8 supralabials, reticulations white or with yellow mid-spots.....*L. striatus*
 5b. Usually 9 supralabials, reticulations always yellow.....*L. flavomaculatus*
 6a. Yellow collar always present, no other pattern, ventrals not angulate laterally.....*L. flavicollis*
 6b. Collar present or absent, body uniform or banded, ventrals angulate laterally.....7
 7a. Collar present, touching the parietals, converging towards snout tip.....*L. aulicus*
 7b. Collar absent, first band far away from parietals, converging towards tail.....*L. anamallensis*

- Ganesh SR, Kalaimani A, Karthik P, Baskaran N, Nagarajan R, Chandramouli SR. 2018. Herpetofauna of Southern Eastern Ghats, India–II; from Western Ghats to Coromandel Coast. *Asian Journal of Conservation Biology* 7(1): 28–45.
- Ganesh SR, Amarasinghe AAT, Vogel G. 2020a. Redescription of *Lycodon travancoricus* (Beddome, 1870) (Reptilia: Colubridae), an Indian endemic snake, with a review of its geographic range. *Taprobanica* 9(1): 50–58.
- Ganesh SR, Bhupathy S, Karthik P, Rao GB, Babu S. 2020b. Catalogue of herpetological specimens at the Sálím Ali Centre for Ornithology and Natural History, India. *Journal of Threatened Taxa* 12(9): 16,123–16,135.
- Ganesh SR, Achyuthan NS. 2020. A new species of Shieldtail Snake (Reptilia: Squamata: Uropeltidae) from Kolli Hill complex, southern Eastern Ghats, peninsular India. *Journal of Threatened Taxa* 12(4): 15,436–15,442.
- Grismer LL, Quah ES, Anuar S, Muin MA, Wood Jr PL, Nor S. 2014. A diminutive new species of cave-dwelling Wolf Snake (Colubridae: *Lycodon* Boie, 1826) from Peninsular Malaysia. *Zootaxa* 3815(1): 51–67.
- Guo P, Zhang L, Liu Q, Li C, Pyron RA, Jiang K, Burbrink FT. 2013. *Lycodon* and *Dinodon*: one genus or two? Evidence from molecular phylogenetics and morphological comparisons. *Molecular Phylogenetics and Evolution* 68(1): 144–149.
- Jablonski D, Masroor R, Khan MA, Altaf M. 2019. Addition to the snake fauna of Pakistan: Mackinnon's Wolf Snake, *Lycodon mackinnoni* Wall, 1906. *Herpetological Bulletin* 147: 21–23.
- Janssen HY, Pham CT, Ngo HT, Le MD, Nguyen TQ, Ziegler T. 2019. A new species of *Lycodon* Boie, 1826 (Serpentes, Colubridae) from northern Vietnam. *ZooKeys* 875: 1–29.
- Luu VQ, Ziegler T, Ha NV, Le MD, Hoang TT. 2019. A new species of *Lycodon* Boie, 1826 (Serpentes: Colubridae) from Thanh Hoa Province, Vietnam. *Zootaxa* 4586(2): 261–277.
- Luu VQ, Bonkowski M, Nguyen TQ, Le MD, Calame T, Ziegler T. 2020. A new species of *Lycodon* Boie, 1826 (Serpentes: Colubridae) from central Laos. *Revue Suisse de Zoologie* 125(2): 263–276.
- Radhakrishna BP. 1993. Neogene uplift and geomorphic rejuvenation of the Indian Peninsula. *Current Science* 64: 787–793.
- Slater WL. 1891. *List of Snakes in the Indian Museum*. Printed by the order of the Trustees of the Indian Museum, Calcutta, British India. 79 p.
- Siler CD, Oliveros CH, Santanen A, Brown RM. 2013. Multilocus phylogeny reveals unexpected diversification patterns in Asian Wolf Snakes (genus *Lycodon*). *Zoologica Scripta* 42(3): 262–277.
- Vogel G, David P. 2019. A new species of the *Lycodon fasciatus* complex from the Khorat Plateau, eastern Thailand (Reptiles, Squamata, Colubridae). *Zootaxa* 4577(3): 515–528.
- Vogel G, Ganesh SR. 2013. A new species of Cat Snake (Reptilia: Serpentes: Colubridae: *Boiga*) from dry forests of eastern Peninsular India. *Zootaxa* 3637(2): 158–168.
- Uetz P, Hallermann J, Hosek J. (Editors). 2020. The Reptile Database. Available: <http://reptile-database.reptarium.cz/> [Accessed: 1 June 2020].
- Underwood G. 1947. Reptiles of Cocanada. *Journal of the Bombay Natural History Society* 46: 613–628.
- Wall F. 1923. A hand-list of the snakes of the Indian Empire. *Journal of the Bombay Natural History Society* 29(2): 345–361.
- Wallach V, Williams KL, Boundy J. 2014. *Snakes of the World: a Catalogue of Living and Extinct Species*. CRC Press, Boca Raton, Florida, USA. 1,237 p.
- Whitaker R, Captain A. 2008. *Snakes of India – the Field Guide*. Draco Books, Chengalpat, India. 387 p.
- Wickramasinghe LM, Vidanapathirana DR, Pushpamal V, Wickramasinghe N. 2020. A new species of *Dryocalamus* (Serpentes: Colubridae) endemic to the rainforests of southwestern Sri Lanka. *Zootaxa* 4748(2): 248–260.
- Wostl E, Hamidy A, Kurniawa N, Smith EN. 2017. A new species of Wolf Snake of the genus *Lycodon* H. Boie in Fitzinger (Squamata: Colubridae) from the Aceh Province of northern Sumatra, Indonesia. *Zootaxa* 4276(4): 539–553.



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Gernot Vogel was born in Heidelberg, Germany, obtained his Ph.D. in Chemistry, and is now working as a chemist. Beginning as a reptile keeper, Gernot developed a great interest in the snake fauna of the Orient. His special interest lies in the systematics of snake genera with large distribution areas, such as *Trimeresurus*, *Boiga*, *Oligodon*, *Lycodon*, *Pareas*, *Dendrelaphis*, and others, with a primary geographical emphasis on China, India, and Indonesia.

Appendix 1. List of comparative material examined.

Lycodon travancoricus: INDIA: BMNH 1946.1.13.75 (Syntype) Travancore, Attraymallay; CAS 15967, Ernakulam, Cochin State; ZSI 13695, ZSI 13696, Piermed (3,500 ft), Travancore, South India; ZSI 13396, Coonoor, Nilgiris; ZSI 17693, 'India,' no locality; FMNH 217705, Ponmudi, Trevandrum district, Kerala; ZSI 13694 and ZSI 13698; ZSI 13531, Koppa, Mysore; SACON/VR-97 Meghamalai, Theni district, Tamil Nadu; BNHS 1061 Tinnevely [= Tirunelveli district], Tamil Nadu; BNHS 1067, 1068, 1069, 1070 all from Matheran, Bombay Presidency; BNHS 1071 Mahabaleshwar, Western Ghats; BNHS 1072 Paralai, Valparai, Anamalai Hills; BNHS 2738 Shevaroy Hills, Madras Presidency; BNHS 2739 Khanapur, Belgaum district, Mysore State; BNHS 2740 Gersoppa Falls, Mysore State.

Lycodon anamallensis: INDIA: BMNH 1946.1.14.92 (Holotype), Anamallays; BMNH 1904.10.18.2, Cannanore, Malabar, south India; BMNH 1904.10.18.4, Cannanore, Malabar, South India; CSPT/ S-28b, Madras; BMNH 1904.10.18.3 Cannanore, Malabar, Kerala; BMNH no number, Madras; BMNH 1924.10.13.7, Mundakayan, Travancore, Kerala; CSPT/S-28a, Madras; NMW 21707 Malabar; MCZ R2232 Pondicheri; SRI LANKA: FMNH 25927, from Colombo; MHNG 1198.70 Sri Lanka, no locality; ZFMK 32253, Sri Lanka, no locality; UPZM-17a and b, Peradeniya Kandy; MHNG 744.7, Ceylon [= Sri Lanka], no locality; NMW 21689.4, Ceylon [= Sri Lanka].

Lycodon striatus: INDIA: BNHS 1083 Nilambur, Malabar; BNHS 1084, 1085 Madras; BNHS 1086 Secunderabad, Hyderabad; SACON/VR-96 Chinnamannur, Theni district, Tamil Nadu; SRI LANKA: ZFMK 52511, Kitulgala; ZFMK 52137, Kitulgala; ZFMK 52510, 'Sri Lanka,' no locality.

Lycodon aulicus: MYANMAR: NMW 21699.1, Bhamo; CAS 215387, Sagaing; CAS 205000, DNA tested, Rakhin; CAS 245960, Tanintharyi; CAS 219800, Ayeyarwadi; NMW 14483, no locality; ZMB 11625, no locality; NMW 21702.2, Pegu; ZMB 10258, Minhla; BMNH 1928.1.4.1, Rangun; NEPAL: FMNH 62427, Tansing; BMNH 1936.7.2.2, Mae District, Doons; BMNH 80.11.10.138, 'Nepal' no locality; BMNH 1984.1216, Royal Chitwan; FMNH 83090, Kathmandu; PAKISTAN: SMF 64484, Lahore, W-Pakistan; INDIA: BMNH 1908.5.23.15, Diburgash, Assam; FMNH 165108, Junganathpur, West Bengal; FMNH 8650, Central province near Chanda; FMNH 60647, Central province, Balaghat dist; BMNH 82.8.26.22, Kinelly (=Kimdey) hills, [Andhra Pradesh]; BMNH 74.4.29.958, Wynads, [Kerala]; ZMB 1790, Bengal; BMNH 1904.10.18.5, Cannanore, Malabar; NMW 37406:1, Ahmednagar, Maharashtra; NMW 37406:2, Ahmednagar, Maharashtra; CAS-SU 12263 Bistrampur, Madhya Pradesh; FMNH 165107 West Bengal, Howrah Dist.; FMNH 161469 West Bengal, Barnijunoh; NMW 14487.1 'Alakan,' ZMB 1791 Bengal; ZMB 9956 Ajmere, Rajasthan; ZMB 1806 Calcutta; NMW 14488 Kolkata; BMNH 1921.6.15.3 Bangalore, Karnataka; SMF 32463 Agra; ZMB 1791 Bengal; BMNH 1955.1.3.11 Mysore, 3,500 ft, Karnataka; BMNH 1936.1.3.4 Namakal, Tamil Nadu; BMNH 1924.10.13.9 Punakanaat, 700 ft, Travancore, Kerala; BMNH 69.8.28.94 Matheran, Maharashtra; MCZ R3877, R4783 Madras; SRI LANKA: FMNH 123906, Ceylon, no locality; ZFMK 52137, Kitulgala; ZFMK 52511, Kitulgala; NMW 21689:5-7, no locality; NMW 14487:2-3, no locality; FMNH 123907 Ceylon, Trincomalee; ZFMK 52510 Sri Lanka, no locality; NMW 21689:1-3 Sri Lanka, no locality; NMW 14487:1 Sri Lanka; INDIAN OCEAN ISLANDS: ZFMK 29976, Mauritius; ZMB 8158 Île Bourbon [=La Réunion]; ZFMK 21766 Mascarenes, Reunion, Manapany; ZFMK 29977 Mauritius.